REMARKS

This Request for Continued Examination and Preliminary Amendment are being filed in response to the Final Office Action dated October 20, 2006.

Claim Objection

Claim 1 is objected to because the phrase, "most suitable" appears to be indefinite. The Examiner requests the applicant to recite it in precise manner. Taking the Examiner's comments into consideration, claim 1 has been amended. Therefore, withdrawal of the objection to claim 1 is respectfully requested.

Claim Rejections under 35 USC §103(a)

Claims 1-3 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Swartz (US 6,871,786) in view of Correa et al. (US 6,340,114B1).

The present invention is a bar code reader which has a first circuit board (12) on which a photodiode (21) is placed. The photodiode (21) receives light reflected from a bar code (2). The bar code reader also has a second circuit board (13) on which a processing unit is placed. The processing unit processes the signal output from the photodiode (21). The position at which the first circuit board (12) is placed can be decided irrespective of the position at which the second circuit board (13) is placed. The first circuit board (12) is placed at a position that is most suitable for receiving light reflected from the bar code (2).

Specifically, the photodiode (21), installed on the circuit board (12), receives light reflected from bar code (2), converts the light into an analog signal, and inputs the analog signal to an amplifier (22). The amplifier (22) amplifies the analog signal and supplies the amplified analog signal an A/D converter (34) installed on the circuit board (12). The A/D converter (34) converts the amplified analog signal to a digital signal. A DSP (33) extracts edge information from this digital signal and inputs the edge information to a DSP (32). The DSP (32) reproduces a bar-code pattern from the edge information and inputs the bar-code pattern to a MPU (31). The MPU (31) converts the bar-code pattern to character data and outputs the character data a device such as a POS terminal.

Swartz et al. describes a bar code scanner having a photodetector and a processor. In column 6, lines 45-56 Swartz et al. states,

> "In all of the various embodiments, the elements of the scanner may be assembled into a very compact package that allows **the scanner to be fabricated as a single printed circuit board or integral module**. Such a module can interchangeably be used as the laser scanning element for a variety of different types of data acquisition and printer systems. For example, **the module may be** alternately used in a hand-held scanner, a table top scanner attached to a flexible arm or mounting extending over the surface of the table or attached to the underside of the table top, or **mounted as a subcomponent or subassembly of a more sophisticated data acquisition and printing system.**

Correa et al. describes an imaging system that can read various kinds optical codes. The imaging system includes various circuit boards, optical elements and chassis elements. As indicated in column 7, lines 34-38 of Correa et al.

> "A packaged image sensor (12) is located on an image sensor board (14). The image sensor board (14) may also contain image acquisition circuitry associated with

the image sensor (12). In a preferred embodiment, the image sensor (12) is an area CCD having a window (16) through which an incident image is received."

Further, as indicated in column 16, lines 54-57,

"As shown in FIG. 17, electronic signals from a CCD detector 400 pass through various signal conditioning blocks to produce a digital output signal 402 applied to a logic board or circuit of the system."

Further, in column 16, lines 63-67 Correa et al. states,

"FIG. 18 is a block diagram of a logic circuit board employed in a preferred embodiment of the present invention. The heart of the logic board is a micro processor 410. Digital signals from the imaging sensor circuits are supplied to the microprocessor by FPGA circuit 411."

Therefore, it would appear that Correa et al. describes a first circuit board and a second a circuit board.

Independent claims 1 and 16 have been amended to specify what the first and second circuit boards actually contain and that the first circuit board is positioned in the bar code reader to optimize the reception of reflected light from the bar code independent from the position of the second circuit board. The prior art of record fails to disclose that the first circuit board is positioned in the bar code reader to optimize the reception of reflected light from the bar code independent from the position of the second circuit board.

Therefore, independent claims 1 and 16 patentably distinguish over the prior art of record by reciting, as exemplified by claim 1,

"A bar-code reader comprising: a first circuit board having a photodiode connected to an amplifier which is connected to an A/D converter which receive light reflected from a bar code and convert the light received to an electric digital signal;

> and a second circuit board having a processing unit that receives the electrical digital signal and converts the electrical digital signal to character data representing the bar code and transmits the character data to a POS terminal, wherein the first circuit board is separate and distinct from the second circuit board and the first circuit board is positioned in the bar code reader so as to optimize the reception of light reflected from the bar code, wherein the position of the first circuit board is placed in the bar code reader irrespective of the position of the second circuit board." (Emphasis Added)

Therefore, withdrawal of the rejection of claims 1-3 under 35 U.S.C. 103(a) as being unpatentable over Swartz (US 6,871,786) in view of Correa et al. (US 6,340,114B1) is respectfully requested.

Claims 4-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Swartz (US 6,871,786) as modified by Correa et al. (US 6,340,114 B1) as applied to claim 2 above, and further in view of Komizo (US 5,663,552).

Komizo describes a portable information terminal having an image processing function.

On page 7 of the Office Action the Examiner asserts that using a photodiode as a photodetector is well known in the art. Under MPEP §2144.03 the applicant requests that the Examiner supply a reference indicating that the first circuit board contains a photodiode that is placed at a position that optimizes receiving light reflected from a bar code independent from the position of a second circuit board.

Conclusion

The above amendments are believed to place the claims in proper condition for examination. Early and favorable action is awaited.

In the event that any fees are due in connection with this paper, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

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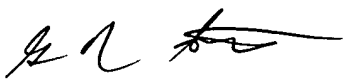

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